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A NEW SPECIES OF *PEROMYSCUS* (RODENTIA:CRICETIDAE), AND A NEW SPECIMEN OF *P. SIMULATUS* FROM SOUTHERN MEXICO, WITH COMMENTS ON THEIR ECOLOGY

By
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From September, 1969, through August, 1970, the senior author studied the ecology of forest rodents on the Gulf-facing, north slope of the Sierra de Juarez in the State of Oaxaca, Mexico. During that time four specimens of *Peromyscus* differing in size and coloration from species known to occur in the region (Goodwin, 1969) were collected. Robertson worked in the same region in March, 1975 with Eric A. Rickart, when a fifth specimen was collected. Comparison of these specimens with other species of *Peromyscus* indicates close phenotypic relationships with *P. lepturus*, *P. lophurus*, and *P. simulatus*, but it is our opinion that the five specimens represent a distinct, previously unnamed species, that we now name and describe below.

Peromyscus chinanteco new species

Holotype.—Adult male; skin, skull, and postcranial skeleton; Museum of Natural History, The University of Kansas (KU), no. 124130; from the north slope of Cerro Pelon, 31.6 km S Vista Hermosa, 2650 m, Oaxaca; obtained on 23 January, 1970, by Paul B. Robertson; original no. 1034.

Geographic distribution.—Known only from the Gulf-facing, north slope of Cerro Pelon, Sierra de Juarez, Distrito de Ixtlan,

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Oaxaca, Mexico (presently known limits are from 21 km south of Vista Hermosa, 2000 m, to 31.6 km south of Vista Hermosa, 2650 m).

Description.—Peromyscus chinanteco is a small member of the genus, somewhat larger externally than *P. simulatus* and slightly smaller than *P. lophurus* (Table 1). The crania of *chinanteco* and *simulatus* are similar in size (Fig. 1) but differ in certain features. The dorsal pelage is grayish-brown and similar in appearance to that of many subadult *Peromyscus*; the underparts are grayish-white and the lateral line is well marked. The pelage is soft and thick, both dorsally and ventrally. The tail is unicolor, long relative to body length, and covered with long, soft hair (measuring approximately 7 mm near the tip of the tail) that stands erect in freshly-killed specimens, giving the tail a bottlebrush appearance. The dorsal pelage of all four feet proximal to the toes is grayish-brown, while the toes are white. There is a moderately distinct, dark eye-ring and a patch of white fur from which the mystacial vibrissae arise.

Comparisons.—Peromyscus chinanteco most closely resembles *P. lepturus, P. lophurus,* and *P. simulatus,* but shows the least affinity with *lepturus,* the only one of the three species with which it occurs sympatrically. *Peromyscus lepturus* is a much larger species, both externally and cranially, has different skull proportions, and has (absolutely and relatively) longer, wider, and higher-crowned cheek teeth.

The available specimens of *P. lophurus,* a species not occurring in the state of Oaxaca, show significant geographic variation. Those from Chiapas, Mexico are smaller than those from El Salvador and Guatemala (Table 1), although similarly proportioned cranially, and approach *chinanteco* in size. Nevertheless, both populations average larger, externally and cranially, than *chinanteco.* The tail of *lophurus* is absolutely longer than that of *chinanteco,* but relatively shorter (tail length/body length = .98 and 1.25, respectively). The skull of *lophurus* is more robust than that of *chinanteco;* it has a relatively more elongate cranium, and relatively wider and shorter nasals (Fig. 1). The auditory bullae of *lophurus* are more inflated, and the anterior end of the mesopterygoid fossa is bowed in *lophurus* and truncate in *chinanteco. Peromyscus lophurus* has relatively larger cheek teeth than *chinanteco* and the posterior margins of the incisive foramina are near the middle of the first tooth.

Peromyscus lophurus differs from the new species in dorsal but not ventral coloration. Both populations of *lophurus* are reddish-brown dorsally and grayish-white ventrally. Unlike *chinanteco,* the entire dorsal surface of the hindfoot is light brown and there is no white spot where the mystacial whiskers arise from the skin.

The third species, *P. simulatus,* was known from only two specimens from Jico, Veracruz collected by E. W. Nelson in 1893.

TABLE 1.—EXTERNAL AND CRANIAL MEASUREMENTS OF ADULT SPECIMENS OF THREE SPECIES OF *Peromyscus* (SUBGENUS *Habromys*) FROM SOUTHERN MEXICO AND CENTRAL AMERICA.[1]

	Peromyscus chinanteco Oaxaca	*Peromyscus lophurus* Chiapas	*Peromyscus lophurus* C. Amer.	*Peromyscus simulatus* Veracruz
Length of head and body	91.2±1.94 5	101.2±3.86 5	107.4±3.32 21	81.3±1.32 3
Length of tail	110.3+8.46 4	112.4+2.58 5	111.4+3.44 20	87.0+10.4 3
Length of hindfoot	23.4+0.48 5	21.0+0.90 5	24.1+0.32 21	22.0+1.16 3
Length of ear	17.4+0.80 5	16.4+1.36 5	18.6+0.38 21	16.0+0.0 1
Greatest length of skull	25.92+0.40 5	27.03+0.80 4	28.07+0.22 22	25.27+1.16 3
Zygomatic breadth	13.23+0.38 3	13.95+0.12 4	14.78+0.24 22	12.93+0.54 3
Interorbital breadth	4.36+0.04 5	4.08+0.10 4	4.37+0.06 22	4.30+0.12 3
Braincase breadth	12.1+0.10 4	11.4+0.42 4	12.3+0.12 22	11.65+0.90 2
Braincase height	7.93+0.14 3	7.68+0.12 4	8.00+0.12 22	7.50+0.20 2
Length of nasals	9.96+0.24 5	10.14+0.34 5	10.70+0.14 22	9.60+.044 3
Length of rostrum	8.58+0.22 5	8.84+0.28 5	9.19+0.14 22	8.60+0.0 2
Breadth of rostrum	4.54+0.24 5	4.38+0.20 5	4.82+0.10 22	4.43+0.24 3
Breadth of zygomatic plate	1.96+0.04 5	2.20+0.08 5	2.37+0.06 22	1.97+0.18 3
Length of diastema	6.18+0.22 5	6.22+0.14 5	6.55+0.14 22	6.25+0.25 2
Incisive foramina length	4.94+0.14 5	5.86+0.20 5	5.95+0.12 22	5.17+0.30 3
Incisive foramina breadth	2.10+0.0 5	2.00+0.14 5	2.18+0.03 22	1.90+0.14 3
Palatal bridge length	4.24+0.22 5	4.08+0.08 5	4.32+0.10 22	3.75+0.30 2
Palatal bridge breadth at M^1	2.70+0.0 5	2.46+0.18 5	2.73+0.10 22	2.75+0.20 2
Palatal bridge breadth at M^3	3.04+0.08 5	2.62+0.14 5	2.89+0.08 22	2.75+0.20 2
Breadth mesopterygoid fossa	1.88+0.44 5	1.88+0.08 5	2.05+0.06 22	1.67+0.14 3
Post-palatal length	8.85+0.20 4	9.45+0.32 4	9.92+0.06 21	8.93+0.58 3
Breadth across incisor tips	1.54+0.10 5	1.58+0.12 5	1.63+0.04 22	1.43+0.06 3

TABLE I.—(Cont.)

	Peromyscus chinanteco Oaxaca	*Peromyscus lophurus* Chiapas	*Peromyscus lophurus* C. Amer.	*Peromyscus simulatus* Veracruz
Alveolar length M^1—M^3	4.18+0.04 5	4.84+0.08 5	5.19+0.08 22	3.97+0.18 3
Length of bulla	4.43+0.06 3	4.75+0.18 4	4.96+0.04 21	4.37+0.06 3

[1] Measurements for males and females are combined. External measurements are those of the collectors and were taken from labels attached to the skins. Limits of the measurements are defined in Musser (1970). The mean, plus and minus two times the standard error of the mean, range, and sample size are listed, in that order, for each dimension.

Robertson found a third specimen of *P. simulatus* (adult female, KU 83263, from 3 km W Zacualapan, 6000 ft, Veracruz, Fig. 1) which had been identified as *P. boylii levipes.* Its external and cranial characters are approximately the same as those of the holotype (Osgood, 1904). *Peromyscus simulatus* is the most similar to *chinanteco,* but there are distinct differences between the two. Externally, *chinanteco* is larger than *simulatus,* and has a tail which is both absolutely and relatively longer (tail length/body length = 1.02 for *simulatus*). The species resemble each other in size, proportions, and robustness of the skulls, but *chinanteco* has a narrower and slightly longer nasal bone, and the cranium is slightly more inflated (Fig. 1). The teeth are of similar size and complexity, and the anterior margin of the mesopterygoid fossa of both species is truncate. In *chinanteco* the posterior margins of the incisive foramina end well before the level of the first cheek tooth, where in *simulatus* the margin is near the middle portion of the first tooth. The dorsal pelage of *simulatus* is reddish-brown like that of *lepturus* and *lophurus,* but its venter is distinctly whiter than that of *chinanteco.*

Relationships.—Peromyscus chinanteco is most closely related to *simulatus* and, therefore, a member of the subgenus *Habromys* (Hooper, 1968), which also contains *lophurus* and *lepturus.* It seems plausible that *chinanteco, lophurus, simulatus,* and possibly *lepturus* evolved from the same parental stock, which became geographically disjunct, resulting in speciation.

Ecology.—The five known specimens of *P. chinanteco* were caught in snap traps baited with rolled oats and peanut butter and set on the ground in pine-oak cloud forest habitat. At all three capture localities the trees are festooned with orchids, ferns, and bromeliads; the undergrowth is thick and wet year-round, and many of the tree trunks are moss-covered. Pines are widely scattered and uncommon. All five rodents were taken at night in openings beneath and among roots. The other species of this subgenus

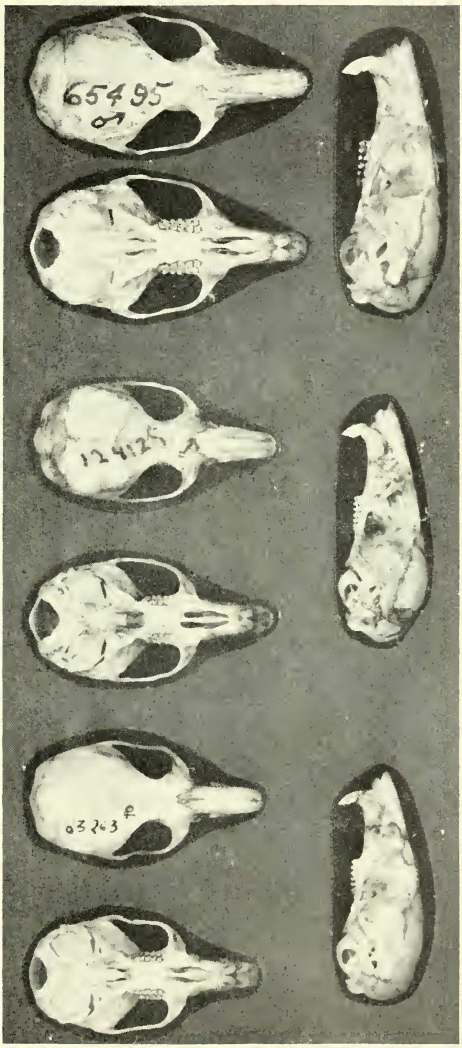

FIG. 1.—Dorsal, ventral, and lateral views of crania. From top to bottom: *P. simulatus* (KU No. 83263, adult female), *P. chinanteco* (KU No. 124129, adult male), *Peromyscus lophurus* (KU No. 66503, adult male).

also inhabit wet forests at high to moderate elevations. Rainfall in this region averages over 575 cm (230 in) per year (Robertson, 1975).

At Cerro Pelon, the type locality, and at a locality 28 km south of Vista Hermosa, *chinanteco* was taken in the same traplines and habitat as *Microtus mexicanus, Oryzomys alfaroi, Peromyscus lepturus, P. thomasi,* and *Reithrodontomys mexicanus. Peromyscus boylei, P. melanocarpus,* and *P. oaxacensis* were taken in adjacent, disturbed habitats at both localities. At 21 km south of Vista Hermosa *chinanteco* was taken in close association with *Microtus mexicanus, Nyctomys sumichrasti, Oryzomys alfaroi, Peromyscus melanocarpus, P. thomasi,* and *Reithrodontomys mexicanus.* In comparison with its congeners at all localities, it is the smallest species (Fig. 2). *Peromyscus lepturus* is about two and a half times as large (weight) as *chinanteco,* and *melanocarpus* is almost three times as large (Robertson, 1975). The sympatric cricetid closest in size is *O. alfaroi,* which is 1.6 times larger. This difference in body size probably permits division of particulate food resources by size between the two species.

Of the six *Peromyscus* shown in Figure 2, *chinanteco* has the highest ratio of tail length to body length. Horner (1954) and Robertson (1975) demonstrated a positive relationship between degree of arboreality and this ratio in a number of genera, including *Peromyscus.* The high ratio found in *chinanteco* suggests that it is largely arboreal, and this may explain why this species appears to be so rare.

An adult female taken on February 25 (dry season) contained one embryo and had one old uterine scar; another taken on July 13 had two old scars which appeared to be the same age.

The stomachs of three individuals were empty, while the stomachs of the other two contained whitish, pulpy material that appeared to be well-masticated seeds.

The specimen of *P. simulatus* was taken by M. R. Lee on 12 April 1960. In his field notes, Lee wrote, "The large, most abundant species [*P. angustirostris*] was taken most commonly around rocks and water seeps. 8 of these were taken. 3 smaller mice which I think may be *P. boylii.* One still smaller mouse with long, well-haired tail ? [*P. simulatus*]. The 4 smaller mice seemed not as dependent upon rocks and water, but were taken near low bushes." Lee's notes indicate that this was wet, dense evergreen forest, the same forest zone (humid upper tropical subzone) from which Nelson took the first two specimens (Goldman, 1951). Lee found *P. angustirostris* to be very common; one specimen of *Reithrodontomys fulvescens* was also taken.

Remarks.—*R. chinanteco* is named after an indigenous Oaxacan

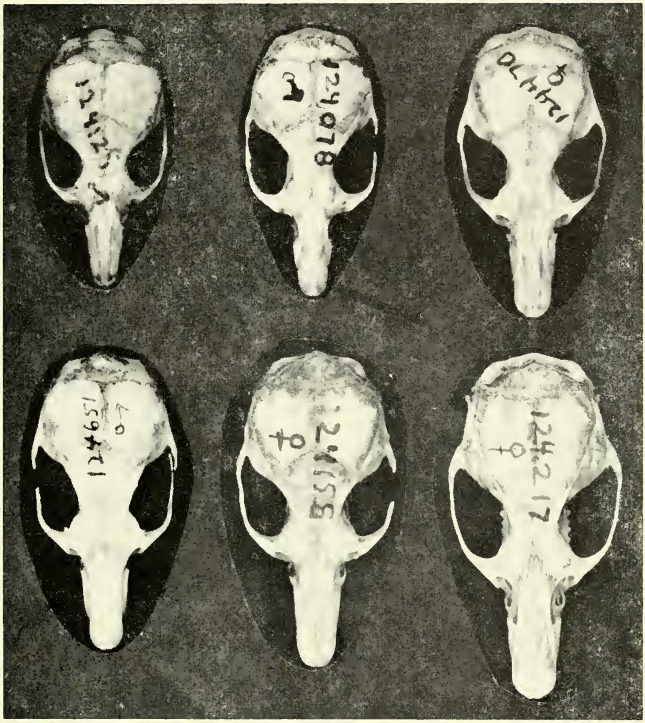

FIG. 2.—Dorsal views of crania of adult specimens of the species of *Peromyscus* occurring sympatrically with *P. chinanteco,* in Oaxaca. From left to right, top: *Peromyscus thomasi, P. melanocarpus, P. oaxacensis;* bottom: *P. lepturus, P. boylei, P. chinanteco.*

people, the Chinantecos, who are also restricted in present distribution to the same general region.

SPECIMENS EXAMINED

Peromyscus chinanteco.—MEXICO: *Oaxaca:* N slope Cerro Pelon, 31.6 km S Vista Hermosa, 2650 m, 3 (KU); 28.6 km S Vista Hermosa, 2350 m, 1 (KU); 21 km S Vista Hermosa, 2000 m, 1 (KU). *Peromyscus lophurus.*—GUATEMALA: Calel, 2 (USNM); Todos Santos, 8500 ft, 6 (USNM); Dept. San Marcos, Volcan Tojumulco, S slope, 10,000 ft, 1 (UMMZ); Dept. Huehuetenango, San Mateo Ixtatlan, 4 km NW Sta. Eulalia, Yayguich, 2950 m, 15

(UMMZ); 2 mi S San Juan Ixcoy, 9340 ft, 8 (KU). EL SALVADOR: Dept. Chalatenango, E slope Los Esesmiles, 8000 ft, 3 (MVZ). MEXICO: *Chiapas:* Triunfo, 1950 m, 6 (UMMZ); San Cristobal de las Casas, Cerro Tzontehuitz, 3000 m, 1 (UMMZ); San Cristobal de las Casas, 4 (USNM). *Peromyscus simulatus:*— MEXICO: *Veracruz:* Xico, 2 (USNM); 3 km W Zacualapan, 6000 ft, 1 (KU).

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